

PATENT APPLICATION
DOCKET NO. 10018092-2

IN THE
UNITED STATES PATENT AND TRADEMARK OFFICE

INVENTOR(S): James P. TERRY et al.

SERIAL NO.: n/a GROUP ART UNIT: 2852

FILING DATE: Herewith EXAMINER: ROYER, William J.

TITLE: ENDLESS BELT DRY TONER AGITATOR

Mail Stop PATENT APPLICATION
COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, VA 22313-1450

SIR OR MADAM:

This Preliminary Amendment is being filed along with a Continuation Application of co-pending U.S. Patent Application Serial No. 10/282,471.

Claim Summary:

Claims originally present: 1-25.
Claims hereby canceled: 3, 4, 9, 11, 12, 14, 15, 18, 19, 21 and 22.
Claims hereby amended: 25
Claims hereby being added: 26-28.
Claims remaining: 1, 2, 10, 13, 17, 24 and 25-28.

Amendment "A"

Specification amendments:

1) Please insert the following paragraph in the specification at page 1, line 2 following the title " ENDLESS BELT DRY TONER AGITATOR ", and before the section titled, "BACKGROUND":

--CROSS REFERENCE TO RELATED APPLICATIONS

This application is a continuation application under 35 U.S.C. § 120 of co-pending U.S. Patent Application Serial. No. 10/282,471, filed October 29, 2002, which is hereby incorporated by reference herein in its entirety. - -

2. Please replace the paragraph at page 2, lines 12-32 with the following:

To better understand the present invention, a brief reference will be made to a conventional prior art developing device using a toner cartridge, shown in Fig. 1. As depicted, a toner cartridge 1 stores a toner (not shown) therein. The cartridge 1 has a casing or housing 2 which defines a toner reservoir 19, and which accommodates an agitator 3 and a magnetic roller 4. The agitator 3 is rotated to agitate the toner existing in the housing 2. The housing 2 is formed with a plurality of toner outlets 5, only one of which can be seen in Fig. 1. A developing device 6 has a casing 7 which includes a toner storing section, or hopper as referred to hereinafter, 8. An agitator 9 is rotatable in the hopper 8 for agitating the toner existing in the hopper 8. A toner inlet 10 is formed in a portion of the casing 7 which faces the toner outlets 5 of the cartridge-housing 2. A developing roller 11 causes the toner to deposit thereon. A doctor blade 12 causes the toner to form a thin layer on the surface of the developing roller 11. An intermediate roller 13 is held in contact with the developing roller 11, so that the toner is transferred from the developing roller 11 to the intermediate roller 13. A photoconductive element in

1 the form of a drum 14 is held in contact with the intermediate roller 13. The toner is
2 transferred from the intermediate roller 13 to the drum 14 in order to develop a latent
3 image electrostatically formed on the drum 14. The resulting toner image is transferred
4 from the drum 14 to a paper or similar recording medium "M" by an image transfer unit
5 15. A cleaning unit 16 cleans the surface of the drum 14 after the image transfer. A
6 charger 17 uniformly charges the surface of the drum 14. An exposing device 18
7 exposes the charged surface of the drum 14 imagewise so as to form the latent image.

8

9 3. Please replace the paragraph at page 2 line 33 through page 3 line 15 with
10 the following:

11

12 The agitator 3 of the toner cartridge 1 of Fig. 1 can be provided with a flexible
13 blade 20 which can conform to the shape of the interior of the housing 2 as the agitator 3
14 rotates in the direction indicated by the arrows. While some toner cartridges have toner
15 reservoirs with complex interior shapes, generally the cross sectional shape of the toner
16 reservoir area can be described as non-square in cross section. This non-square
17 geometry helps to maintain contact between the flexible ~~scraper~~blade 20 and the walls
18 of the toner reservoir. Accordingly, toner storage volume in the toner reservoir is
19 impacted by not being able to use a geometry that is more square or rectangular in cross
20 section than prior art toner reservoirs. That is, it is not always possible to maximize the
21 toner storage volume within the available space in a toner cartridge, since prior art toner
22 reservoirs are generally configured to ensure that prior art agitators will be able to
23 access the entire toner reservoir. Put another way, toner cartridges are typically
24 configured to fit within an imaging apparatus based on the presence of ancillary
25 components located within the imaging apparatus. The exterior dimensions imposed on
a toner cartridge by these ancillary components thus define a maximum toner reservoir
volume which can be achieved in a toner cartridge. Yet prior art toner agitators do not

1 always allow the maximum available volume to be utilized due to the need to
2 accommodate the limitations of prior art agitators.

4 3
4 4. Please replace the paragraph at page 3 lines 16-29 with the following:

6 In addition to toner cartridges which do not include the photoconductor (as
7 depicted in Fig. 1), other prior art toner cartridges are known which incorporate the
8 photoconductor. One such example is depicted in Fig. 2, which shows a toner cartridge
9 30 having a housing 31 which defines a toner reservoir 32 in which is located an agitator
10 34. Toner from within the toner reservoir 32 egresses through outlet opening 35 to a
11 hopper area 36. An application roller 38 applies toner from the hopper area 36 to the
12 optical photoconductor ("OPC") 40, which has been charged by charge roller 42. A
13 scraper blade 44 removes any residual toner from the OPC 40 after toner has been
14 transferred from the OPC 40 to a sheet of imaging media (not shown), and the residual
15 ~~waste~~-toner is stored in a waste storage area 46. Agitator 34 of toner cartridge 30 is
16 depicted in a front view in Fig. 3. As can be seen, the agitator 34 includes two blade
17 portions 50 which are supported by, but distal from, a central shaft 48, thus creating
18 open areas 52. The open areas 52 allow the toner to "fluff" or volumize as it is agitated,
19 rather than merely being pushed around inside the toner reservoir 32 (Fig. 2).

20
21 5. Please replace the paragraph at page 6 lines 1-14 with the following:

22
23 Toner reservoirs are generally defined by a major longitudinal dimension. In one
24 embodiment of the invention the agitator belt spans the majority of this major longitudinal
25 dimension within the toner reservoir. In this way the belt is generally in contact with the
toner across the entire major longitudinal dimension of the toner reservoir, allowing for
an even supply of the toner to other toner distribution components (e.g., application

1 rollers, transfer rollers, the optical photoconductor ("OPC"), etc.). Further, since the
2 endless belt contacts toner about the entire 360 degree of the internal periphery of the
3 belt, greater contact is achieved between the toner and the agitator, thus resulting in
4 enhanced volumization (or agitation) of the toner. (As used herein, the term
5 "volumization" means mixing a dry solid powder, such as toner, with air to achieve an
6 essentially fluidic state of the powder.) Thus, in addition to allowing toner storage
7 volume to be increased within a toner cartridge, the toner agitator belt can provide a
8 more evenly distributed supply of toner to toner distribution components and ultimately to
9 the OPC and the imaging media.

10

11 6. Please replace the paragraph at page 6 lines 19-28 with the following:

12

13 Turning now to Fig. 4, an oblique diagram of a toner cartridge 100 is depicted in
14 an oblique view. The toner cartridge 100 includes a housing 102, which is shown as
15 having a handle 109 (to facilitate insertion and removal of the toner cartridge 100 from
16 an imaging apparatus), and a side panel 107 which is in a generally square or
17 rectangular shape and which generally defines a the toner reservoir area 103. The toner
18 cartridge 100 further includes a toner discharge zone 101, which extends from the toner
19 reservoir area 103 and provides a toner distribution outlet area for toner to be distributed
20 to additional toner distribution components, such as an OPC (see OPC 14 of Fig. 1, for
21 example). As depicted in Fig. 4, the toner cartridge 100 further includes two drive
22 connections 110, the operation of which will be described further below.

23

24 7. Please replace the paragraph at page 6 line 29 through page 7 line 16 with
25 the following:

1 Fig. 5 depicts a side cross sectional view of the toner cartridge 100 of Fig. 4. The
2 housing 102 generally defines a toner reservoir 104 (in which toner can be stored), a
3 toner distribution outlet area 121, and a toner egress area 129 which allows toner to
4 move from the toner reservoir 104 to the toner distribution outlet area 121. In the
5 example depicted, a transfer roller 112 is located in the toner distribution outlet area 121.
6 A toner outlet opening 114 allows toner to exit from the toner cartridge 100 to other toner
7 distribution components (similar to outlet openings 5 of the prior art toner cartridge 1 of
8 Fig. 1). Disposed within the toner reservoir 104 is a rotatable endless belt 106, which
9 can also be described as a toner agitator belt, or "agitator belt". The toner reservoir 104
10 is generally defined by a reservoir primary surface 119 within the housing 102, and
11 preferably the rotatable endless belt 106 is positioned proximate the reservoir primary
12 surface 119. The agitator belt 106 is defined by an outer belt surface 131, which can be
13 proximate the reservoir primary surface 119, and an inner belt surface 133 which is
14 opposite the outer belt surface 131. The area within the toner reservoir 104 which is
15 proximate to the inner belt surface 133 defines a mixing region. During manufacture of
16 the toner cartridge 100, toner can be added to the toner reservoir 104 via a toner inlet
17 opening (not shown), which can then be plugged by a plug 135 (Fig. 4), thus generally
18 filling the volume defined by the inner belt surface 133 and the ends (or side panels 107,
19 Fig. 4) of the toner cartridge 100. As will be described further below with respect to Fig.
20 6, the agitator belt 106 can generally span the major longitudinal length of the toner
21 reservoir 104 (i.e., the dimension into the sheet on which Fig. 5 is drawn, generally
22 corresponding to the depth dimension of the oblique drawing of the toner cartridge 100
23 of Fig. 4).

24
25 8. Please replace the paragraph at page 7 lines 17-22 with the following:

1 The agitator belt 106 is depicted in Fig. 5 as being positioned within the ~~cartridge~~
2 housing 102 so as to have a space between the ~~belt~~-outer belt surface 131 and the
3 reservoir primary surface 119. However, the outer belt surface 131 of the agitator belt
4 106 can be in contact with the reservoir primary surface 119 to prevent accumulation or
5 caking of toner between the agitator belt 106 and the housing 102. Other means of
6 preventing caking of toner in this area will be described further below.

7

8 9. Please replace the paragraph at page 7 line 23 through page 8 line 2 with
9 the following:

10 As depicted in Fig. 5, the toner cartridge 100 further includes a plurality of support
11 rollers 108a -108d which can support the rotatable endless belt 106 in proximity to the
12 reservoir primary surface 119. However, it is not required that the agitator belt 106 be
13 located adjacent to the reservoir primary surface 119. At least one of the rollers 108a-d
14 can be connected to a drive connection which allows the agitator belt 106 to be rotated
15 within in the toner reservoir 104. For example, Fig. 4 depicts drive connections 110
16 which are located proximate an exterior surface (side panel 107) of housing 102. As will
17 be described with respect to Fig. 6 below, drive connections 110 of Fig. 4 can be
18 connected to rollers 108b and 108d of Fig. 5. The drive connections connectors 110 can
19 be engaged by a drive mechanism (not shown) within an imaging apparatus which is
20 configured to receive the toner cartridge 100. The drive mechanism can then be used to
21 actuate the endless rotatable-belt 106, causing the endless belt 106 to rotate within the
22 toner reservoir 104 and thereby agitate or stir the toner. In most configurations the drive
23 mechanism is only actuated when the imaging apparatus receives a command to
24 generate an image, thus reducing wear on the drive mechanism and the agitator belt
25 106.

10. Please replace the paragraph at page 8 lines 3-20 with the following:

1 Turning now to Fig. 6, a cross sectional front view of the toner cartridge 100 of
2 Figs. 4 and 5 is depicted. As can be seen, the ~~cartridge~~-housing 102 defines the toner
3 reservoir volume 104, in which the agitator belt 106 is disposed. Support rollers 108a
4 and 108d can be seen supporting the agitator belt 106 in proximity to the reservoir
5 primary surface 119. Support roller 108d is a drive roller, and is connected by drive
6 shaft 120 to drive connection 110 (also seen in Fig. 4). Roller 108a is not connected to a
7 drive connection 110, but is merely supported in the housing 102 by cylindrical supports
8 122. Roller 108a can thus be considered an idler roller (i.e., it does not contribute a
9 motive source to the rotational actuation of agitator belt 106, but merely functions to hold
10 the belt 106 in position (in this case, proximate to the reservoir primary surface 119)).
11 Returning briefly to Fig. 5, it can be seen that rollers 108b and 108d are respective first
12 and second drive rollers, and rollers 108a and 108c are respective first and second idler
13 rollers. The drive shaft 120 (Fig. 6) can be sealed between the toner reservoir 104 and
14 the ambient atmosphere 137 by a sealing means to impede toner from exiting the toner
15 reservoir 104 to the ambient atmosphere 137. Exemplary sealing means include, for
16 example, O-ring 118 and/or seal 116. O-ring 118 and seal 116 can be fitted into, or
17 attached to, housing 102, and placed in contact with the drive shaft 120. Suitable
18 materials for O-ring 118 and seal 116 include silicon impregnated elastomers.

19
20 11. Please replace the paragraph at page 8 line 21 through page 9 line 4 with
21 the following:

22
23 As can be seen in Fig. 6, the rotatable endless agitator belt 106 is preferably
24 provided with perforations or openings 124 to allow toner to pass from the toner
25 reservoir ~~area~~-104 through the agitator belt 106. In this way, toner can move from the
toner reservoir 104 to the toner reservoir egress area (129, Fig. 5). As depicted in Fig.
6, the openings in agitator belt 106 are longitudinal slits 124. In this example the agitator

1 transfer-belt 106 can be a belt fabricated from a material such as rubber or neoprene, or
2 a thin sheet of a plastic such as polyethylene or nylon, and the slits 124 can be stamped
3 from the sheet material. However, other configurations can be used to allow toner to
4 pass through the agitator belt 106. For example, the agitator belt 106 can be fabricated
5 from a plastic mesh, as shown in Fig. 7, which depicts a front view of a toner agitation
6 belt 206 (similar to the view of belt 106 in Fig. 6). Agitator belt Belt 206 of Fig. 7 can also
7 be fabricated from a plastic mesh extrusion which thus produces an elongated closed
8 ("endless") hollow member which can be then be cut into the desired belt lengths. Such
9 plastic mesh netting extrusions are available, for example, from U.S. Netting of Erie, PA.
10 Extruded mesh netting can be produced in a wide range of thicknesses and aperture
11 sizes. The material's thickness, weight, mesh size, and strand shape can be altered to
12 meet various design criteria, such as toner particle size and desired migration rates of
13 toner through the openings. The agitator belt 206 also can be fabricated from a
14 polyester mesh, available for example from Satoh & Co., Ltd. of Yodogawa-ku, Osaka,
15 Japan.

16

17 12. Please replace the paragraph at page 9 lines 18-29 with the following:

18

19 Turning now to Fig. 9, another rotatable endless belt (or "agitator belt") 406 that
20 can be used as a toner agitator in accordance with yet another embodiment of the
21 present invention is depicted in a partial side sectional view (similar to the left side of
22 agitator belt 106 of Fig. 6). The rotatable endless belt 406 is defined by an outer belt
23 surface 429 which ~~is~~ can be oriented proximate the reservoir primary surface (such as
24 reservoir primary surface 119 of toner cartridge 100 of Fig. 5). The rotatable endless
25 belt 406 is further defined by an inner belt surface 431 which is opposite the outer belt
surface 429. The agitator belt 406 includes a plurality of scraping members 423 which
protrude from the outer belt surface 429, and which can contact the reservoir primary

1 surface (such as surface 119 of toner cartridge 100, Fig. 5) to thereby scrape any toner
2 off of the reservoir primary surface, thereby reducing the tendency for toner to cake or
3 accumulate between the reservoir primary surface (e.g., surface 119 of Fig. 5) and the
4 belt-outer belt surface (e.g., belt surface 429, Fig. 9).

5

6 13. Please replace the paragraph at page 9 line 30 through page 10 line 9
7 with the following:

8

9 Fig. 9 also shows how stirring members 421 can be attached to the inner belt
10 surface 431 of the agitator belt 406. The stirring members 421 can aid in agitating toner
11 in the toner reservoir 404 as the belt 406 is rotated. Turning to Fig. 10, a front partial
12 sectional view of the agitator belt 406 ~~is in~~ Fig. 9 is depicted. As can be seen, the
13 stirring members 421 can be staggered to provide a more random stirring action. Since
14 the stirring members 421 protrude above the inner belt surface 431 of the agitator belt
15 406, they can interfere with support rollers, such as rollers 108a-d of Fig. 5. To address
16 this situation the agitator belt 406 can be supported by shortened rollers 408 which do
17 not transit the entire width of the agitator belt 406 (as do rollers 108a-d of Fig. 5).
18 Further, the edges of the agitator belt 406 can be provided with roughened track areas
19 425 to allow a driven one of the rollers 408 to gain traction on the agitator belt 406.
20 Further, agitator belt 406 can be fabricated from a relatively stiff material (such as an
21 extruded polyethylene mesh) so that the agitator belt 406 does not appreciably sag near
22 the middle of the agitator belt 406. Alternately, a shaft can pass between rollers 408 on
23 opposite sides of the agitator ~~toner~~-belt 406 (only the left side rollers are shown in Fig.
24 10), and intermediate rollers can be placed on the shaft to provide support for the
25 agitator belt 406.

1 14. Please replace the paragraph at page 10 lines 10-23 with the following:

2

3 Turning now to Fig. 11, a partial front sectional view of another agitator belt 506
4 that can be used is depicted. The view in Fig. 11 corresponds to viewing the thickness
5 of the agitator belt 506 after it has been sectioned, similar to the upper and lower
6 sections of the agitator belt 406 which is depicted in Figs. 9 and 10. As depicted in Fig.
7 11, the outer surface of the agitator belt 506 is indicated by edge 501, and the inner
8 surface of the agitator belt 506 is indicated by edge 503. As indicated in Fig. 11, one or
9 both of the outer surface 501 or the inner surface 503 of the agitator belt 506 can be
10 roughened to provide the advantages described above with respect to belt 406 of Figs. 9
11 and 10. That is, the roughening on the outer surface 501 of the agitator belt 506 can
12 facilitate scraping toner off of the toner reservoir primary surface (such as primary
13 reservoir surface 119 of Fig. 5), while the roughening on the inner surface 503 of the
14 agitator belt 506 can facilitate stirring of toner within the toner reservoir (such as toner
15 reservoir 104 of Fig. 5). The roughening can be provided by texturing the material out of
16 which the agitator belt 506 is fabricated, or by applying roughening agents (such as
17 plastic granules) to the surfaces of the agitator belt 506.

18

19 15. Please replace the paragraph at page 10 line 24 through page 11 line 16
20 with the following:

21

22 In the description of Figs. 4 through 6 above it was described how driven rollers
23 108b and 108d (Fig. 5) can be used to drive the agitator belt 106 in a rotational manner.
24 It will, however, be appreciated that other devices and structures can be used to drive a
25 toner agitator belt in accordance with other embodiments of the present invention. One
such drive system is depicted in Fig. 12. Fig. 12 depicts a side sectional view of a toner
cartridge 200 in accordance with another embodiment of the present invention. The

1 toner cartridge 200 is similar to the toner cartridge 100 depicted in Fig. 5, and contains
2 like-numbered components which were described above with respect to Fig. 5.
3 Specifically, the toner cartridge 200 of Fig. 12 includes a toner agitator agitation-belt
4 (endless rotatable belt) 106, which is disposed within a toner reservoir 204 defined by
5 housing 202. As shown, the agitator belt 106 is supported by rollers 208a-d in proximity
6 to the interior surface 219 of the toner reservoir 204. In the configuration depicted in Fig.
7 12, the drive system for the agitator belt 106 includes a single drive connection which is
8 located proximate the exterior surface of the housing 202 (the drive connection is not
9 shown in Fig. 12, but can be similar to drive connection 110 which is located proximate
10 side panel 107 in Fig. 4). However, in Fig. 12 the drive connection is connected to a
11 central driving wheel 230 (located within the toner reservoir 204). The central driving
12 wheel 230 is in turn in contact with a plurality of secondary driving wheels 232a-d, and
13 each secondary driving wheel 232a-d is in contact with a corresponding one of the
14 rollers 208a-d. Thus, by turning the drive connection (not shown), the central driving
15 wheel 230 drives the secondary driving wheels 232a-d, and consequently the rollers
16 208a-d, and thus agitator belt 106 is moved rotationally within the toner reservoir 204. In
17 this way all of the rollers 208a-d can be driven by a single connection. The drive system
18 depicted in Fig. 12 can reduce slack forming in the agitator belt 106 since the agitator
19 belt 106 will now be driven at all of the support locations (i.e., at rollers 208a-d).
20 Although the central driving wheel 230 and the secondary driving wheels 232a-d are
21 depicted as being rollers, they can also be geared to provide positive engagement
22 therebetween. In this instance the ends of rollers 208a-d can also be fitted with gearing
23 to positively engage the secondary rollers 232a-d.

24

25 16. Please replace the paragraph at page 11 lines 17-25 with the following:

1 It will be observed that in Figs. 5, 6-9-6, 9 and 12 the mixing region (i.e., the area
2 within the toner reservoir (e.g., toner reservoir 104, Fig. 5) proximate to the inner surface
3 of the agitator belt (e.g., belt inner surface 133, Fig. 5) is defined (in a side view) by the
4 peripheral shape of the agitator belt (such as agitator belt 106, Fig. 5). In the
5 embodiments and examples depicted in Figs. 5, 6-9-6, 9 and 12, the mixing region has a
6 non-circular shape (in side view). This non-circular shape of the mixing region allows for
7 the volume of the toner reservoir to be increased (and thus, the quantity of toner within
8 the reservoir) over a toner cartridge having a mixing region that is defined by a periphery
9 that is circular in shape.

10
11 17. Please replace the paragraph at page 11 line 26 through page 12 line 2
12 with the following:

13
14 As indicated above, the present embodiments of the present invention are
15 applicable not only to toner cartridges but also to toner systems which are resident within
16 an imaging apparatus. Accordingly, these embodiments provide for an imaging
17 apparatus having a toner agitating system as described herein, as well as such a toner
18 agitating system which is resident within an imaging apparatus. One such example is
19 provided in Fig. 13, which depicts a simplified side elevation section view of an imaging
20 apparatus 300 (as well as a toner supply system 310 resident within the imaging
21 apparatus 300). The imaging apparatus 300 is depicted in a simplified drawing in that
22 the imaging components and media transport components are not shown, such being
23 well known in the art. The imaging apparatus 300 can be, for example, a printer, a
24 photocopier, a facsimile machine, or a combination "multi-function" imaging apparatus.

25
18. Please replace the paragraph at page 12 lines 3-15 with the following:

1 As depicted in Fig. 13, the imaging apparatus 300 has a toner supply system 310
2 which includes a toner reservoir housing 370 which defines a toner reservoir 307. A
3 rotatable endless belt 356 is disposed within the toner reservoir 307, and can be used to
4 agitate toner within the toner reservoir 307 in the manner described above with respect
5 to agitator belt 106 of Fig. 5. The rotatable endless belt 356 can have openings
6 disposed therein to allow toner to pass therethrough. Examples of belt-types and
7 opening which can be used in the toner supply system 310 include agitator belts 106
8 (Figs. 5 and 6), 206 (Fig. 7), 306 (Fig. 8), 406 (Figs. 9 and 10) and 506 (Fig. 11), all
9 described above. The rotatable endless belt 356 can be supported by support rollers
10 358 and 360 (generally corresponding to rollers 108a and 108d of Fig. 5), as well as
11 other rollers which are not visible in Fig. 13. One or more of the support rollers 358, 360
12 can be a driven roller, also in the manner described above with respect to Figs. 5 and
13 12. For example, a motor 368 can be connected to support roller 358, thus making
14 support roller 358 a drive roller.

15
16 19. Please replace the paragraph at page 12 lines 16-26 with the following:
17

18 The toner supply system 310 in the imaging apparatus 300 of Fig. 13 can further
19 include an antechamber 304 which is defined by the housing 370, and which is in fluid
20 communication with the toner reservoir 307 by way of toner passageway 311. The
21 antechamber 304 includes an inlet opening 350 to receive dry toner therethrough. In
22 this way, the toner reservoir 307 can be replenished by filling the antechamber 304 with
23 dry toner through the inlet opening 350. A rotatable auger 362, driven by motor 364, can
24 be provided as part of the toner supply system 310 to move toner from the
25 antechamber 304 into the toner reservoir 307 via the toner passageway 311. Other
types of material handling apparatus, such as paddles or belts, can be used in place of

1 the auger 362 to facilitate migration of toner from the antechamber 304 into the reservoir
2 307.
3

4 20. Please replace the paragraph at page 12 line 27 through page 13 line 2
5 with the following:
6

7 Yet another embodiment of the present invention provides for a method of
8 agitating toner within a toner reservoir. The method includes providing a rotatable
9 endless belt, such as agitator belt 106 of Fig. 5 (or 206 (Fig. 7), 306 (Fig. 8), 406 (Fig. 9)
10 or 506 (Fig. 11)) within the toner reservoir, and rotating the endless belt within the toner
11 reservoir to cause toner within the reservoir to be agitated. The endless belt can be
12 placed in close proximity to a wall surface of the toner reservoir (such as interior surface
13 119 of Fig. 5). Further, the endless belt preferably has openings disposed therein to
14 allow toner to pass through the openings as the toner is agitated by the endless belt.
15 The method can further include rotating the endless belt during an imaging process, and
16 not rotating the endless belt when an imaging process is not taking place or is not
17 imminently ready to take place.
18

19 (Continued on next page.)
20
21
22
23
24
25